SIDDHARTH KUMAR ANANDA KUMAR

JUNIOR MECHANICAL ENGINEER

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LOCATION | Bengaluru, INDIA
EXPERIENCE | 2 Years 0 Month

Key Skills

- Mechanical Engineering
- Mechanical Design
- Solid Works
- Structural Design
- Autodesk Fusion 360
- Ansys
- Autodesk Inventor
- MATLAB
- CATIA
- AutoCAD
- Computer Aided Design (CAD)
- Computer Aided Manufacturing (CAM)
- C++
- Arduino IDE
- Html/Css
- Javascript
- Flask
- Firebase (Realtime DB Auth)
- Git/GitHub
- Progressive Web Apps (PWA)
- IoT System Design
- Sensor Integration
- CNC Machining

Profile Summary

Results-driven Mechanical Engineer with 2 years of hands-on experience in mechanical design, FEA, and manufacturing process optimization. Proven track record in improving system efficiency, reducing production costs, and enhancing shop floor operations. At IPA Pvt. Ltd., led initiatives that tripled CNC output, improved calibration accuracy by 15%, and boosted laser engraving efficiency by 50%. Experienced in CAD tools (SolidWorks, Fusion 360, AutoCAD), ANSYS for structural/thermal simulations, and cross-functional team leadership. Successfully designed modular systems and conducted thermal optimization for renewable energy and healthcare devices, achieving up to 40% cost savings. Holds an MS in Mechanical Engineering from UT Dallas and a BTech from VIT, with a strong foundation in data-driven engineering, PLM, and Python.

Work Experience

Junior Mechanical Engineer

IPA Private Limited

03/2025 - Present

• Calibrated a Universal Testing Machine (UTM) using dead weights across 10 linear loading/unloading stages to validate load cell performance.
• Collaborated with a teammate to identify fundamental load balancing discrepancies in the UTM, driving design modifications to enhance system reliability.
• Created detailed AutoCAD drawings for manufacturing teams, ensuring compliance with technical specifications and production timelines.

- G-Code Optimization
- 3D Printing
- Solid Works Simulation
- Microsoft Office Suite
- Technical Documentation
- Product Development
- Engineering Drawing
- Geometric Dimensioning And Tolerancing (Gd&T)
- Rapid Prototyping
- Cross-Functional Collaboration

Certification

- SOLIDWORKS CAD Design Associate (CSWA)

Languages

- English

Social links

- https://sid2028-portfolio.netlify.app/

• Proposed structural adjustments to address load distribution inefficiencies, improving calibration accuracy by 15%.
• Designed custom Jigs and structures to improve testing speed and efficiency by 25%. Improved laser engraving efficiency by 50%.
• Led a cross-functional team of 12 technicians and operators—working alongside an external consultant—to dismantle and rebuild the Machine Shop's management system, ensuring clear accountability for production output, machine utilization, tool maintenance and time tracking.
• Designed and implemented a data-driven dashboard in Excel capturing key metrics—production volume, machine run-time, tool life and downtime—providing real-time visibility and enabling root-cause analysis of bottlenecks.
• Collaborated with CAM specialists to reengineer CNC tool paths, cutting cycle time by over 50% and boosting projected monthly output from 500 to 1,500 load-cell blanks.
• Validated new Programs on the shop floor, documenting set-up sheets and run-rates for smooth hand-off to production teams.
• Conducted one-on-one skill audits for 12 Machine Shop employees, mapping individual proficiencies against job requirements.
• Rebalanced task assignments—pairing high-skill operators with complex set-ups—leading to a 15% uplift in overall department throughput.

Mechanical Design Engineer

Anemoi Technologies

01/2019 - 01/2020

• Mounting System Design: Designed and developed a package mounting system using SolidWorks and Fusion 360, achieving a 15% reduction in material usage and a 25% increase in load capacity.
• FEA & Structural Analysis: Conducted Finite Element Analysis (FEA) using ANSYS to enhance structural integrity, resulting in a 20% increase in prototype durability.
• Modular Design Implementation: Led 3D prototyping and testing phases, reducing design-to-prototype lead time by 30% and demonstrating proof of concept within 6 months.
• Collaborated with cross-functional teams to integrate design feedback from manufacturing, reducing assembly time by 12%.

Lead Curriculum Developer - Robotics

JerseySTEM

05/2024 - 01/2025

• Custom LEGO Build Design: Designed custom LEGO builds using Studio 2.0, ensuring modularity and ease of assembly.
• Engineering Principles: Ensured structural stability and functionality of designs, incorporating real-world mechanical principles
• Optimization: Optimized designs to balance simplicity and engineering complexity, reducing build times by 20% while maintaining

Internship

Simulation Lab, 2 Months

- Conducted simulation of an 8-battery pack system under varying temperatures using different nano fluids in Ansys

- Analyzed the cooling capabilities of the system to optimize performance

Education

MS/M.Sc(Science) - Mechanical Engineering

2023

UNIVERSITY OF TEXAS AT DALLAS, UNITED STATES

B.Tech/B.E. - Mechanical

2022

Vellore Institute of Technology, Vellore

Projects

Wind Turbine Rotor Optimization

61 Days

• Objective: Worked with Dr. Giacomo Valerio Iungo to optimize rotor blade profiles for a wind turbine to achieve a high coefficient of power (Cp).
• Blade Profile Optimization: Analyzed various blade shapes and angles of attack to improve aerodynamic performance and energy conversion efficiency for various Tip Speed Ratios.
• Results: Increased the coefficient of power over 35%, leading to a more efficient design that would

generate more energy at lower wind speeds.

Comparative Study of Thermal Shields on Solar Probes

120 Days

• Modeled front-and-rear heat shield designs for a near-Sun space probe using Fusion 360, based on real-world mission constraints and exposure profiles.
• Simulated extreme heat conditions (up to 1341°C) through linked transient thermal simulations in ANSYS, evaluating thermal load over time.
• Compared three candidate materials — Alumina, Ceramic 8D, and Tantalum — based on emissivity, absorptivity, and structural temperature response.
• Assessed how directional solar radiation impacts shielding effectiveness, internal heat dissipation, and equipment survivability.
• Interpreted results using both simulation data and literature values to propose material recommendations for long-duration solar probe missions.
• Gained applied experience in thermal radiation theory, materials science for space systems, and multiphysics simulation workflows.

Low-Cost Portable Oxygen Concentrator

151 Days

• Design for Healthcare: Led a team to design a compact, energy-efficient oxygen concentrator using Arduino for rural healthcare facilities.
• Arduino-Controlled Mechanism: Implemented Arduino-based airflow control to optimize power consumption, reducing energy use by 30%.
• Structural and Thermal Analysis: Conducted thermal and structural analysis using ANSYS and Autodesk Fusion 360, ensuring design robustness during exothermic reactions.
• Cost Optimization: Reduced production cost by 40% through material and component standardization, enabling affordability in low income regions.

CNC Tool Parameter Calculator

15 Days

• Developed a browser-based web app using Flask and Firebase to calculate CNC machining

parameters such as cutting force, power consumption, and tool life.
• Implemented support for tool/material presets and user modes (Beginner to Expert), enabling flexible input control and improving usability.
• Integrated PDF export and PWA features for offline access and real-world shop floor deployment.
• Streamlined the machining setup process by reducing trial-and-error and enabling data-driven tool selection and parameter optimization.